

SOFTWARE ENGINEERING



MARATHON CLASS

DEC 2020 & JUNE 2021

ALL PYQS SOLVED



BY RASHMI MA'AM

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2022 Net / Set
P48
Concept → Time

जो बीत गया उस पर बात मत कीजिए और
जो वक्त बच गया है उसे बर्बाद मत कीजिए।

21 DAYS LEFT

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Telegram SE

		9 May, 2022		
		Monday		
Revision Course	Subject	AI	PDE	Digital
	Time	10:30 - 11:30 am	3 - 4:30 pm	9 - 11pm
	Faculty	Rashmi	Vinita	Shilpa
	Google Meet Link	https://meet.google.com/gtm-ycic-eeb		

dbms
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UGC NET JRF 2022

CRASH COURSE

PAPER-2

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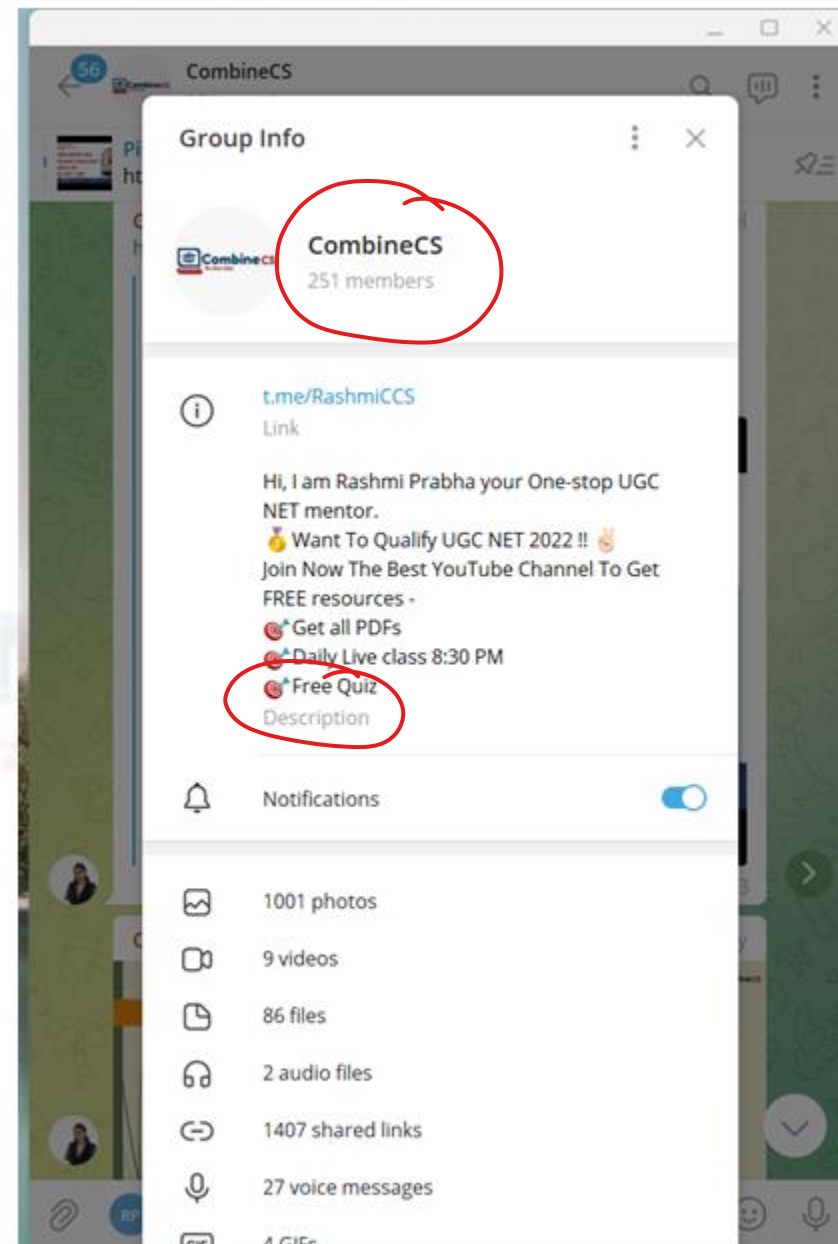
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SE

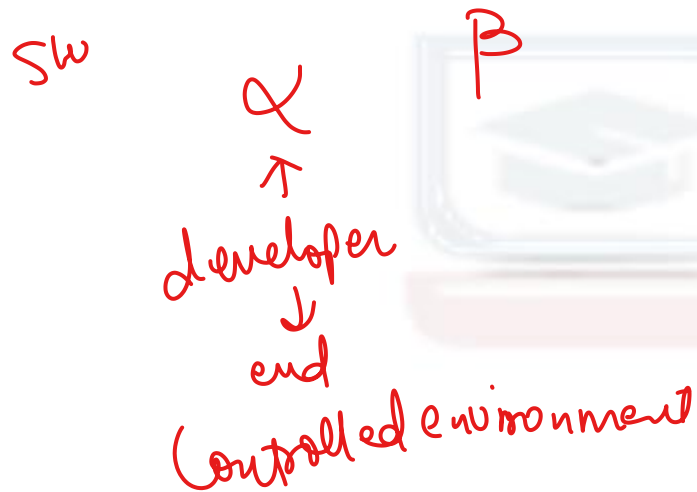
Q1: In software testing, beta testing is the testing performed by _____.

easy

- A) potential customers at the developer's location
- B) potential customers at their own locations
- C) product developers at the customer's location
- D) product developers at their own locations

SE jobs α, β

Q1: In software testing, beta testing is the testing performed by _____.



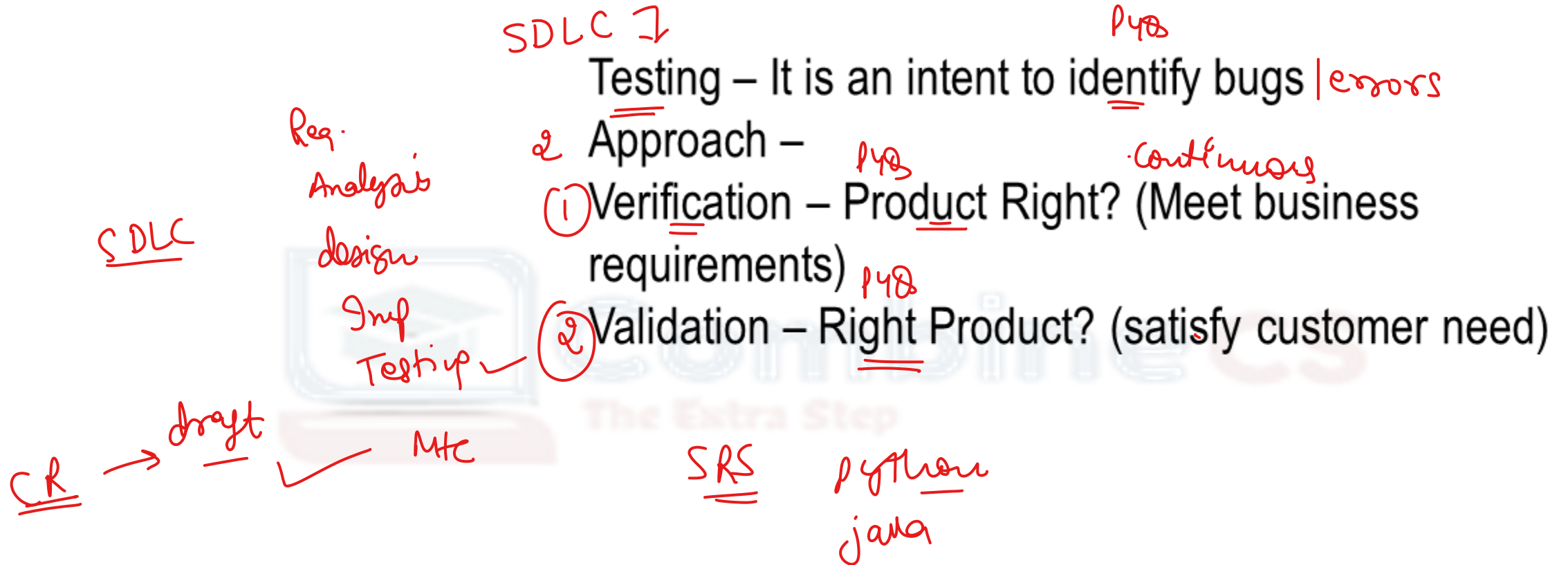
A) potential customers at the developer's location

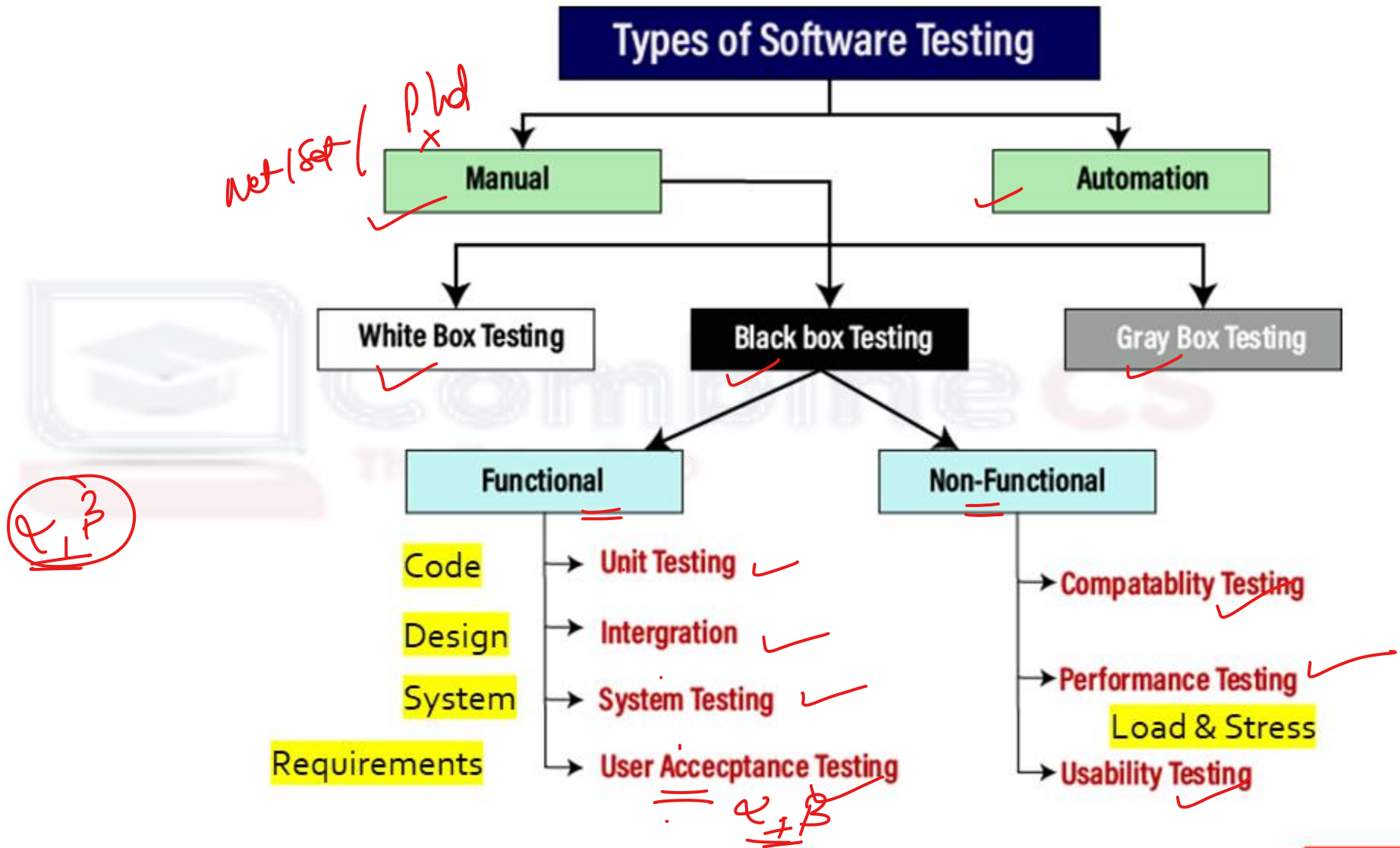
B) potential customers at their own locations β -testing

C) product developers at the customer's location

D) product developers at their own locations

↓ α -testing





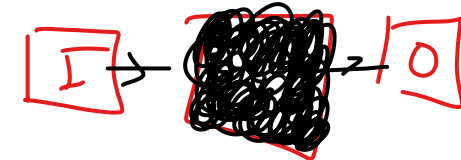
QA

Black Box Testing / Functional / Behavioural / IO driven



2020

1. Boundary Value Technique
2. State Transition Technique
3. Equivalence Partitioning Technique
4. Cause-Effect Technique
5. All-pair Testing Technique
6. Decision Table Technique
7. Acceptance Testing (Validation Testing)



Alpha testing is conducted in the organization and tested by a representative group of end-users at the developer's side and sometimes by an independent team of testers in a controlled environment

Beta testing is the last phase of the testing, which is carried out at the client's or customer's site.

Real

B- Behavioral
Blade

TRICK

if ()
{
}

→ Graph

Basis

transparent ↓

White box Testing – Glass Box / Structural /
Logic Driven
(BCD)



- ✓ 1. Path testing
- ✓ 2. Loop testing
- ✓ 3. Condition testing
- ✓ 4. Cyclomatic Complexity
- ✓ 5. Branch Coverage
- ✓ 6. Path Coverage
- ✓ 7. Decision Coverage

PRO

$e \rightarrow +1$
 $p + 1$

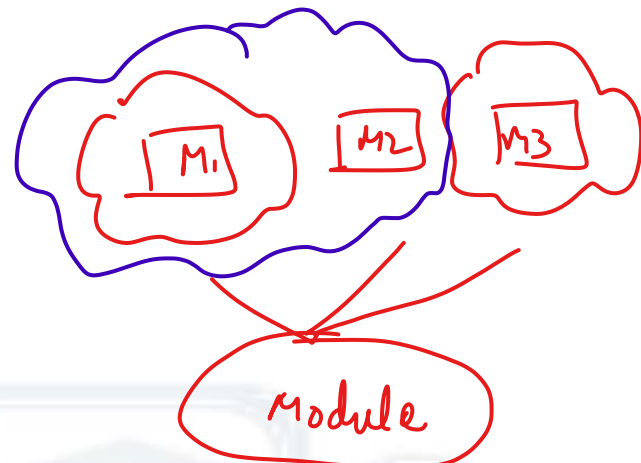
} 2018

bounded + len

Gray W+B

x
Gray Box testing

Gray box testing is a combination of white box and Black box testing. It can be performed by a person who knew both coding and testing. And if the single person performs white box, as well as black-box testing for the application, is known as Gray box testing.



system

Acceptance Testing
&
P

① Unit Testing

② Integration Testing ^{M1 M2}

1. Top down ✓

2. Bottom Up ✓ ^{old}

3. Regression ✓ ^{ntc. → new version}

4. Smoke ✓
= is daily

System Testing

Q1: In software testing, beta testing is the testing performed by _____.

- A) potential customers at the developer's location
- B) potential customers at their own locations
- C) product developers at the customer's location
- D) product developers at their own locations

Beta Testing is performed by **real users of the software application in a real environment**. Beta testing is one of the type of User Acceptance Testing. Beta version of the software, whose feedback is needed, is released to a limited number of end-users of the product to obtain feedback on the product quality.

Q2: In software engineering, what kind of notation do formal methods predominantly use?

P48

open-ended

- A) Computer code
- B) Diagrammatic
- C) Mathematical
- D) Textual

Q: In software engineering, what kind of notation do formal methods predominantly use?

A) Computer code ~~X~~

B) Diagrammatic ~~X~~

C) Mathematical

D) Textual ~~X~~

Formal methods are techniques used to model complex systems as mathematical entities.

Examples:

Examples B-Method, RAISE, Z notation.

AI

Available tools, techniques, and metrics

1. Larch: LARCH provides two levels of specification. A general high-level modeling language, and a collection of implementation dialects designed to work with specific programming languages.
2. SML: Standard Meta-Language is a strongly typed functional programming language originally designed for exploring ideas in type theory. SML has become the formal methods workhorse because of its strong typing and provability features.
3. HOL: HOL, short for Higher Order Logic, is an automated theorem proving system. HOL is a computer-aided proof tool: it proves simple theorems and assists in proving more complicated statements, but is still dependent on interaction with a trained operator. HOL has been extensively used for hardware verification, the VIPER chip being a good example.
4. Petri Nets: Petri Nets are a good example of a very 'light' formal specification. Originally designed for modeling communications, Petri Nets are a graphically simple model for asynchronous processes.

Q3: Identify the correct order of the following five levels of Capability Maturity Model (from **lower to higher**) to measure the maturity of an organization's software process.

- A. Defined
- B. Optimizing
- C. Initial
- D. Managed
- E. Repeatable

sequence

lower to higher

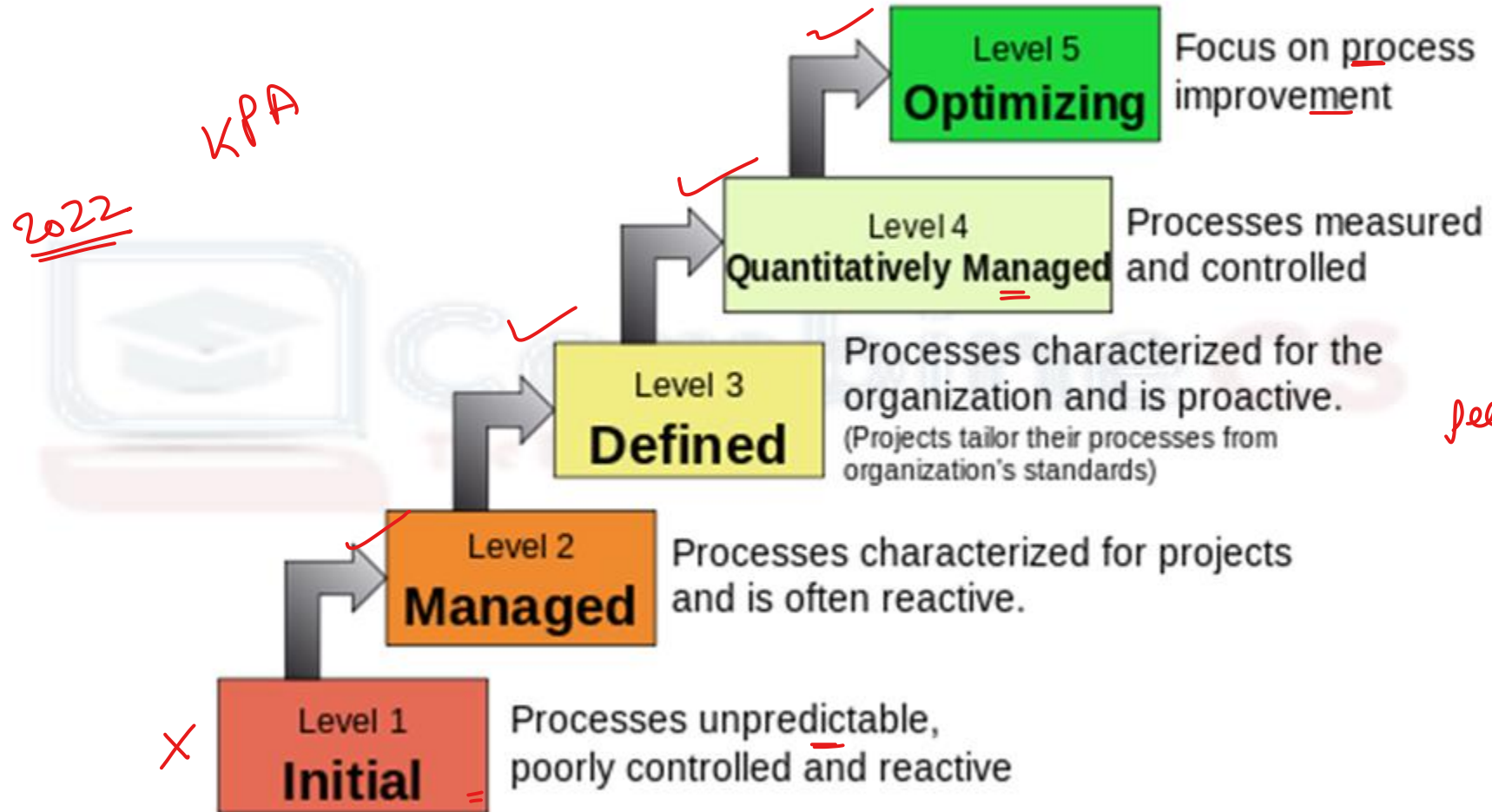
higher to lower

2021

Choose the correct answer from the options given below

- A) C, A, E, D, B
- B) C, B, D, E, A
- C) C, E, A, B, D
- D) C, E, A, D, B

Characteristics of the Maturity levels



Q3: Identify the correct order of the following five levels of Capability Maturity Model (from **lower to higher**) to measure the maturity of an organization's software process.

A. Defined (3)

B. Optimizing (5)

C. Initial (1)

D. Managed (4)

E. Repeatable (2)

Choose the correct answer from the options given below

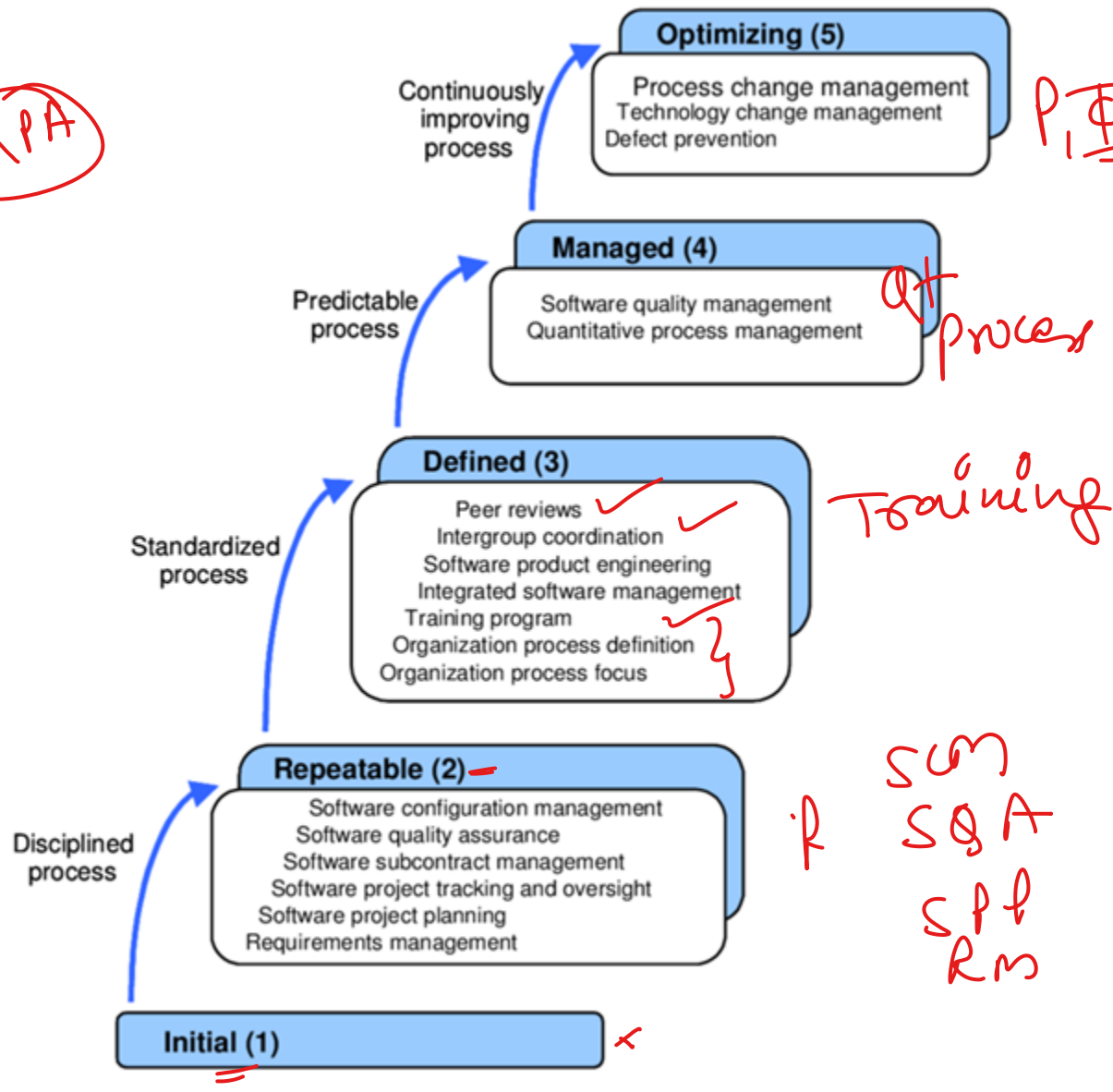
A) C, A, E, D, B

B) C, B, D, E, A

C) C, E, A, B, D

D) C, E, A, D, B ✓

KPA



P, I, F, C defect

Q process

Training

R
SOM
SQA
SPP
RM

148

Q) Which of the following sets represent five stages defined by Capability Maturity Model (CMM) in increasing order of maturity?
(NET June 2016)

decreasing

1. Initial, Defined, Repeatable, Managed, Optimized
2. Initial, Repeatable, Defined, Managed, Optimized
3. Initial, Defined, Managed, Repeatable, Optimized
4. Initial, Repeatable, Managed, Defined, Optimized

Q) Which of the following sets represent five stages defined by Capability Maturity Model (CMM) in **increasing order** of maturity?
(NET June 2016)



1. Initial, Defined, Repeatable, Managed, Optimized
- 2. Initial, Repeatable, Defined, Managed, Optimized**
3. Initial, Defined, Managed, Repeatable, Optimized
4. Initial, Repeatable, Managed, Defined, Optimized

Q4: Given below are two statements, one is labeled as Assertion A and the other is labeled as Reason R

Assertion A : Software developers do not do exhaustive software testing in practice.

Reason R : Even for small inputs, exhaustive testing is too computationally intensive (e.g., takes too long) to run all the tests.

In light of the above statements, choose the correct answer from the options given below

- A) A is false but R is true
- B) A is true but R is false
- C) Both A and R are true and R is the correct explanation of A
- D) Both A and R are true but R is NOT the correct explanation of A

NTa - (2)

meaning

Q4: Given below are two statements, one is labeled as Assertion A and the other is labeled as Reason R

Assertion A : Software developers do not do exhaustive software testing in practice. *T*

Reason R : Even for small inputs, exhaustive testing is too computationally intensive (e.g., takes too long) to run all the tests. *because*

In light of the above statements, choose the correct answer from the options given below

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Deadline
run

easy
p48

Q5: If every requirement stated in the Software Requirement Specification (SRS) has only one interpretation, then SRS is said to be

- ~~A) Consistent~~
- ~~B) Correct~~
- ~~C) Unambiguous~~
- ~~D) verifiable~~

} properties of SRS

Q5: If every requirement stated in the Software Requirement Specification (SRS) has only one interpretation, then SRS is said to be



- A) Consistent
- B) Correct
- C) Unambiguous ✓
- D) verifiable

Ambiguous - unclear

clear

Q) The Software Requirement Specification(SRS) is said to be _____ if and only if no subset of individual requirements described in it conflict with each other.

(NET DEC 2018)

same

- (A) Correct
- (B) Consistent
- (C) Unambiguous
- (D) Verifiable

Q) The Software Requirement Specification(SRS) is said to be _____ if and only if no subset of individual requirements described in it conflict with each other.

(NET DEC 2018)

- (A) Correct
- (B) Consistent
- ✓ (C) Unambiguous
- (D) Verifiable

System = 100
100

before { } ~ After
db

90% ~ 100

1. SRS is said to be **correct** if it covers all the requirements that are actually expected from the system. 148

2. **Consistent** if there are no conflicts between any set of requirements.

3. An SRS is said to be **unambiguous** if all the requirements stated have only one interpretation or everything is clear.

4. An SRS is **verifiable** if there exists a specific technique to quantifiably measure the extent to which every requirement is met by the system.

Q6) : In the context of Software Configuration Management (SCM), what kind of files should be committed to your source control repository?

- A. Code files
- B. Documentation files
- C. Output files
- D. Automatically generated files that are required for your system to be used.

Choose the correct answer from the options given below:

- A) A and B only
- B) B and C only
- C) C and D only
- D) D and A only

Summarize
5
10
CN
AI
SE 9
Leary
4.5 -
Testing

Q6: In the context of Software Configuration Management (SCM), what kind of files should be committed to your source control repository?

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Choose the correct answer from the options given below:

- A) A and B only**
- B) B and C only**
- C) C and D only**
- D) D and A only**

The SCM process defines a number of tasks:

1. Identification of objects in the software configuration
2. Version Control
3. Change Control
4. Configuration Audit
5. Status Reporting

List Of The Best Source Code Management Tools

1. GitHub
2. Git
3. GitLab
4. Apache Subversion (SVN)
5. CVS
6. Mercurial
7. Monotone
8. Bitbucket Server
9. Team Foundation Server (TFS)
10. Bazaar

Q7: Match List I with List II

List I	List II
(Software Process Model)	(Description)
A. Waterfall Model	I. Software can be developed incrementally
B. Evolutionary Model	II. Requirement compromises are inevitable
C. Component-based Software Engineering	III. Explicit recognition of risk
D. Spiral Development	IV. Inflexible partitioning of the project into stages

Choose the correct answer from the options given below:

- A) A - I, B - IV, C - II, D - III
- B) A - II, B - III, C - I, D - IV
- C) A - IV, B - I, C - II, D - III
- D) A - IV, B - I, C - III, D - II

Q7: Match List I with List II

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(Software Process Model)	(Description)
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Choose the correct answer from the options given below:

A) A - I, B - IV, C - II, D - III

B) A - II, B - III, C - I, D - IV

C) A - IV, B - I, C - II, D - III

D) A - IV, B - I, C - III, D - II

Q8: Given below are two statements

Statement I: Cleanroom software process model incorporates the statistical quality certification of code increments as they accumulate into a system.

Statement II: Cleanroom software engineering follows the classic analysis, design, code, test, and debug cycle to software development and focusing on defect removal rather than defect prevention.

In light of the above statements, choose the correct answer from the options given below

- A) Both Statement I and Statement II are false**
- B) Both Statement I and Statement II are true**
- C) Statement I is false but Statement II is true**
- D) Statement I is true but Statement II is false**

Sum

Q8: Given below are two statements

Statement I: Cleanroom software process model incorporates the statistical quality certification of code increments as they accumulate into a system.

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The clean room approach to computer code development relies on 5 characteristics:



- 1. Formal specification:**
- 2. Incremental development:**
- 3. Structured programming:**
- 4. Static verification:**
- 5. Statistical testing of the system:**

Q9: A system has 99.99% uptime and has a mean-time-between-failure of 1 day. How fast does the system have to repair itself in order to reach this availability goal?

- A) 10 Seconds**
- B) 11 Seconds**
- C) 12 Seconds**
- D) 9 Seconds**

Q) A server crashes on the average once in 30 days, that is, the Mean Time Between Failures (MTBF) is 30 days. When it happens it takes 12 hours to reboot it, that is, Mean Time To Repair (MTTR) is 12 hours.

(NET JUNE 2016)



The availability of server with these reliability data values is approximately.

1.96.3 %

2.97.3 %

3.98.3%

4.99.3%

Q) A server crashes on the average once in 30 days, that is, the Mean Time Between Failures (MTBF) is 30 days. When it happens it takes 12 hours to reboot it, that is, Mean Time To Repair (MTTR) is 12 hours.

(NET JUNE 2016)

The availability of server with these reliability data values is approximately.

1.96.3 %

2.97.3 %

3.98.3%

4.99.3%

$$A = \text{Uptime} / (\text{Uptime} + \text{Downtime})$$

MTBF is Mean Time Between Failures

MTTR is Mean Time To Repair

$$A = \text{MTBF} / (\text{MTBF} + \text{MTTR})$$

So MTBF = 30day = 30*24=720 hr

$$A = 720 / (720 + 12)$$

$$= 98.3\%$$

Q) What is the availability of a software with the following reliability figures? **GATE 2004**

Mean Time Between Failure (MTBF) = 25 days
Mean Time To Repair (MTTR) = 6 hours

- (A) 1%
- (B) 24%
- (C) 99%
- (D) 99.009%

Q) What is the availability of a software with the following reliability figures? (GATE 2004)

Mean Time Between Failure (MTBF) = 25 days
Mean Time To Repair (MTTR) = 6 hours

- (A) 1%
- (B) 24%
- (C) 99%
- (D) 99.009%

$$\begin{aligned}\text{Availability} &= \frac{25 \times 24}{25 \times 24 + 6} \\ &= \frac{600}{606}\end{aligned}$$

Q9: A system has 99.99% uptime and has a mean-time-between-failure of 1 day. How fast does the system have to repair itself in order to reach this availability goal?

- A) 10 Seconds
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SE (Year)	Topics	No. of Ques.
2021	Testing, <u>SRS</u> , <u>SCM</u> , <u>CMM</u> , <u>Clean Room</u> , <u>Process Model</u> , <u>Reliability</u> , 2 Open Ques.	9
2022	Agile Model, Cohesion & Coupling, Cocomo Model, Maintenance, Quality, Testing,	

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